

The Product Game

1	2	3	4	5	6
7	8	9	10	12	14
15	16	18	20	21	24
25	27	28	30	32	35
36	40	42	45	48	49
54	56	63	64	72	81

1	2	3	4	5	6	7	8	9
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Materials:

Game board, 2 paper clips, and about 20 small pieces of pink paper and 20 small pieces of blue paper (or any two colors)

Object of the Game: To get four squares in a row—vertically, horizontally, or diagonally.

1. To begin the game, Player 1 moves a marker (for example, a paper clip) to a number in the factor list of numbers 1-9 along the bottom of the game screen.
2. Player 2 then moves another marker (another paper clip) to any number in the factor list (including the number marked by Player 1). The product of the two marked numbers is determined, and Player 2 puts their game piece (for example, a small blue piece of paper) on that space.
3. Player 1 moves *either* marker (paper clip) to another number, and then puts their game piece (for example, a small pink piece of paper) on the new product.
4. Players take turns moving a marker, determining the product, and placing their game piece on the that square. If a product already has a game piece on it, the player does not get a square for that turn.
5. Play continues until one player wins, or until all squares have game pieces on them.

This Product Game Investigation was adapted with permission and guidance from *Prime Time: Factors and Multiples*, Connected Mathematics Project, G. Lappan, J. Fey, W Fitzgerald, S. Friel and E. Phillips, Dale Seymour Publications (1996), pp. 17-25.

The Factor Game

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30

Rules:

1. Player A chooses a number on the game board and circles it with their color.
2. Player B uses a different color to circle all the proper factors of Player A's number. The proper factors of a number are all the factors of that number, except the number itself. For example, the proper factors of 12 are 1, 2, 3, 4, and 6. Although 12 is a factor of itself, it is not a proper factor.
3. Player B colors a new number, and Player A colors all the factors of the number that are not already colored.
4. The players take turns choosing numbers and coloring factors.
5. If a player chooses a number that has no factors left that have not been colored, that player loses a turn and does not get the points for the number colored.
6. The game ends when there are no numbers remaining with uncolored factors.
7. Each player adds the numbers that are colored with his or her color. The player with the greater total is the winner.